

# WESTSIDE CREEKS ECOSYSTEM RESTORATION

*Appendix J: Recreation*



# RECREATION APPENDIX

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## WESTSIDE CREEKS DRAFT RECREATION PLAN

Recreation development provides opportunities that significantly benefit communities. The social, cultural, scientific, and education values of these recreation opportunities were considered throughout recreation formulation for the Westside Creeks Ecosystem Restoration and Recreation project in San Antonio, Texas.

## RECREATION AUTHORITY

The legislative basis for Federal participation in recreation development is found in Section 4 of the Flood Control Act of 1944, as amended, the Federal Water Project Recreation Act of 1965 (Public Law 89-72), and the Water Resources Development Act of 1986 (Public Law 99-662). These give broad authority to include recreation as a project purpose. The authority to include recreation as a project purpose falls within WRDA 2000 as stated below:

Additional authorization and guidance for the proposed ancillary recreation resources development is contained in the CECW-AG, 11 June 1998 Memorandum, Policy Guidance Letter No. 59, Recreation Development at Ecosystem Restoration Projects and EP 1165-2-502. Despite austere budgets and policy requirements, recreational developments can and do contribute to community health and well being (CECW, 1998). The recreation resources that are being proposed as part of the San Antonio Channel will comply with the inclusion of the WRDA 2000, SEC. 335. The project for flood control, San Antonio channel, Texas, authorized by section 203 of the Flood Control Act of 1954 (68 Stat. 1259) as part of the comprehensive plan for flood protection on the Guadalupe and San Antonio Rivers in Texas, and modified by section 103 of the Water Resources Development Act of 1976 (90 Stat. 2921), is further modified to include environmental restoration and recreation as project purposes.

## FEDERAL INTEREST

The primary Federal interest for the WSC study is contribution to National Ecosystem Restoration (NER) through restoration of degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition. National Economic Development (NED) benefits which were also evaluated in this study include recreation. Recreation benefits were found to be justified and the recreation plan is included in the recommendation.

## STUDY OBJECTIVE

### ECOSYSTEM RESTORATION (ER) OBJECTIVE

Restore to the extent practicable, a sustainable, dynamic, riverine ecosystem providing habitat for aquatic and riparian dependent migratory and native resident bird species in the Westside Creeks study area. The study area is shown in Figure 1.

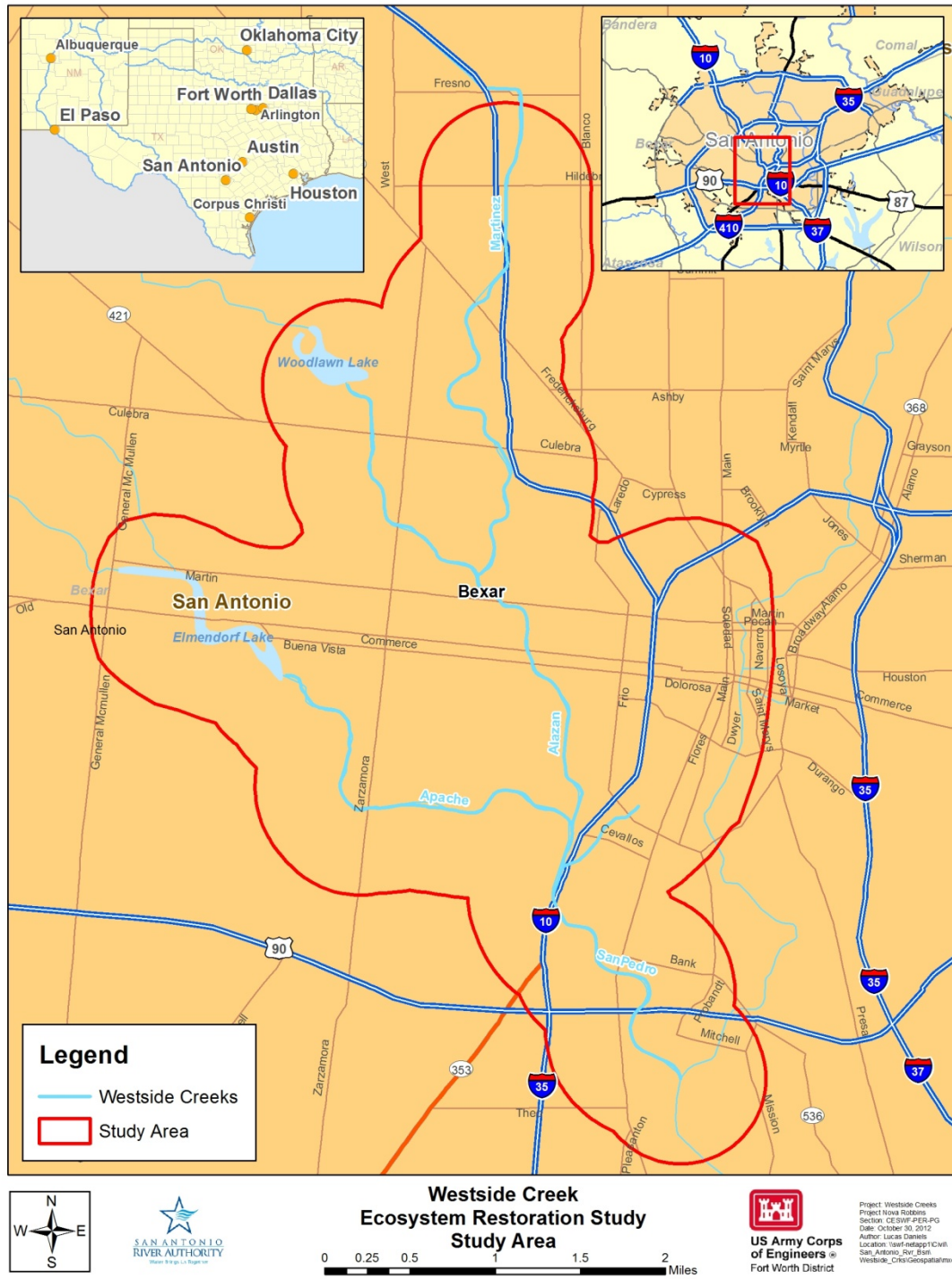


Figure 1. Westside Creeks Study Area

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## RECREATION OBJECTIVE

Maximize to the extent practicable recreation benefits along the Westside Creeks compatible in scope and scale of the project's ecosystem restoration objectives and consistent with national, regional, and local recreation goals.

## STUDY AREA BACKGROUND

### WESTSIDE CREEKS HISTORY

The Westside Creeks are located just west of downtown San Antonio in an area at the northern part of the Rio Grande Plain and the adjacent Edwards Plateau. Elevations in the project area range from approximately 720 feet along Fredericksburg Road to approximately 570 feet at the confluence of San Pedro Creek with the San Antonio River. Martínez Creek flows in to Alazán Creek, which flows into Apache Creek, which in turn flows into San Pedro Creek.

The evolution of the Westside Creeks (Alazán, Apache, Martinez, and San Pedro Creeks) over the last half-century is largely due to shifts in urbanization and in flood risk reduction and maintenance practices. Historically the area was known with a more natural stream consisting of a baseflow channel, a wider channel, and a large floodplain. Straightening and channelization of the creeks yielded grass-lined trapezoidal channels that delineate most of the creeks, dramatic concrete banks, and underground bypass tunnels (San Pedro Creek) which ultimately disconnected the historically tied communities. The communities hope the project will restore former historical and cultural connections that originally tied them with the river.

As part of a coordinated approach to address drainage issues in San Antonio, SARA initiated a San Antonio River Watershed Master Plan that provided the opportunity to explore ecosystem restoration improvements to these four creeks. This master plan allows the creeks to meet multiple objectives of improving both the ecosystem habitat and sustainability of the creeks while promoting recreation benefits for the adjacent neighborhoods and region.

Given the importance of the Westside Creeks Ecosystem Restoration and Recreation Project, the community, stakeholders, and other public groups have been heavily involved in developing community visions and prioritization perceived as essential for the community-Westside Creeks symbiotic relationship. The outcome of these public workshops, the Westside Creeks' visions were developed under four frameworks that apply to each creek and serve as guiding principles from which all other design decisions are to be made. One of the four visions is "connections". This vision relates directly to the benefits offered by recreation resources. The creation of recreation resources connecting neighborhoods and creeks is an elevated need communicated universally by the communities bounding the Westside Creeks.

### WESTSIDE CREEKS COMMUNITIES

The WSC is bound by a community recognized as being one of the largest Hispanic communities in San Antonio. According to the U.S Census data (2000), approximately 89 percent of the population in the communities identified themselves as Hispanic compared to San Antonio's total Hispanic population of approximately 59 percent. The median household incomes of tracts in the Westside Creeks area also tend to be lower than that of the entire City varying as much as 30% lower. For more information on the socio-economics of the Westside Creeks population as it relates to the city and county, see the Socio-Economic appendix.

A large number of San Antonio's population ride their bikes for many reasons e.g. entertainment, exercise, and commuting to work. The majority these bicyclists (95%) are classified as a less confident adult rider and children who are less comfortable riding on streets than on designated facilities such as bike lanes or trails. A study by the City of San Antonio (San Antonio Bike Plan 2011) suggests that bicyclists in the WSC area are forced to use roads for transportation purposes since an alternate transportation route e.g. trail is not available for work commuters. This condition is reasoned to be a cause of the most bicycle-related crashes in San Antonio.

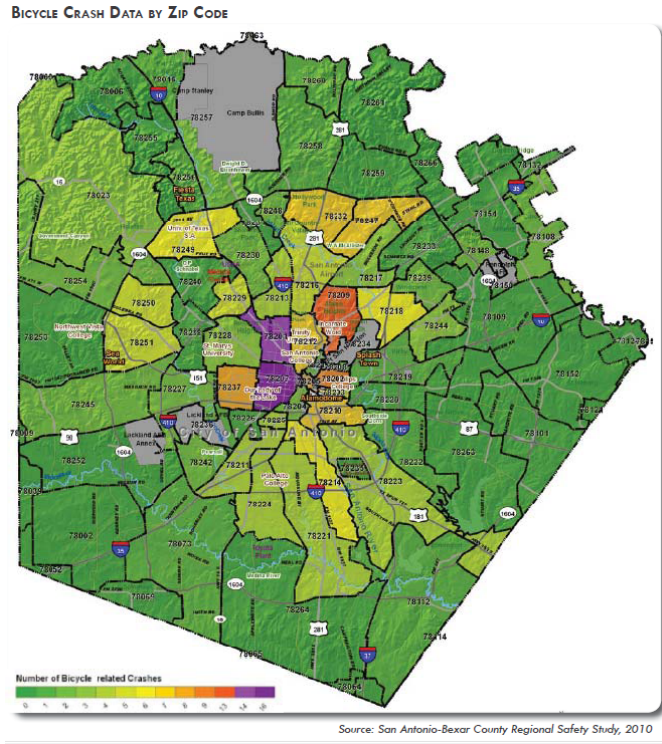


Figure 2. Bicycle Crash Data by Zip Code

The American Obesity Society declared San Antonio, Texas the heaviest city in the United States. According to statistics from the U.S. Center for Disease Control, 31 percent of its residents are obese and 65 percent are overweight: the worst record in the nation. Metro Health, the San Antonio Metropolitan Health District whose mission is to provide leadership and services for San Antonio and Bexar County to prevent illness and promote healthy behaviors, states that the WSC study area is within a zone of school districts which have a 37-67 percent obesity rate among children.

## INTRODUCTION TO RECREATION PROPOSED FOR THE WSC STUDY

This recreation appendix for the Westside Creeks project report contains the description of the proposed recreation elements and conceptual plan. The objective of the proposed recreation concept is to identify the restoration compatible recreation that is ancillary and complimentary to the proposed project. The recreation elements proposed are incidental benefits and would not be used in the justification of the recommended plan. Recreation costs have been included in the

U.S. Army Corps of Engineers (USACE), Fort Worth District, Microcomputer Aided Cost Engineering System (MCASES) costs. A determination of recreation facility design standards to meet USACE and local code requirements will be gauged. SARA will operate and maintain the proposed recreational features. Adjustments may be made to the dollars spent depending on Congressional funding, sponsor budget, and project design.

## **PROPOSED RECREATION OVERVIEW**

The WSC study Ecosystem Restoration Recommended Plan (Alternative 6) would include the following features:

- Riparian
- Pilot Channel
- 30 trees per acre
- 70 trees per acre
- Slackwater
- Wetland
- Recreation Components
- Project Monitoring Plan
- Draft Operation Manual
- OMRR&R

The recreation plan would be incorporated into all of the features. The recreation facilities proposed would include: trailheads with and without vehicular parking, shade structures with interpretive boards, and an estimated 14 miles of designated multi-use trails atop and within embankments. A trail will be provided on one side of the creek where appropriate to provide access for walking, running, bike riding, bank fishing, wildlife watching, and environmental interpretation with no associated recreation cost. Gathering areas would provide ample areas for visitors and the community to congregate to bird watch, bike, and hike. Proposed project trails would provide pedestrians access to community attributes such as schools, parks, churches, cemeteries, and places to shop and work.

Proposed recreation facilities and activities would be ancillary to the proposed Westside Creek ER project and work harmoniously with project purposes. The proposed project recreation facilities would help to fill the San Antonio Park & Recreation System Strategic Plan 2006 regional deficits and link with other regional recreation facilities. Since it is anticipated that the WSC trails would connect with the expanding linear greenway park system and extend points of destination, a larger pool of visitors outside of the communities bounding the WSCs is expected at the proposed project recreation facilities.

No additional real estate is required for the proposed recreation features since all proposed features will be located on project fee title lands. The real estate is to be verified in the Real Estate appendix of the Westside Creek report. All recreation features will be compatible with the environmental goals and objectives of the proposed project, and will not detract from the environmental or socioeconomic benefits generated by the proposed project.

## **RECREATION FACILITIES MANAGEMENT OVERVIEW**

Recreational features would be cost shared 50 percent Federal and 50 percent non-Federal. The nonfederal sponsor SARA will be responsible for 100 percent of the recreation operations,

maintenance, repair, rehabilitation and replacement (OMRR&R) as outlined in the USACE Planning Guidance Notebook (Engineering Regulation [ER] 1105-2-100, Apr 2000m page E-287), ER 1165-2-400, Paragraph 7 page 6, and the USACE/SARA Cooperative Agreement.

## RELATIONSHIP TO OTHER PLANS AND STUDIES

In addition to meeting the Corps' mission for ecosystem restoration and recreation, this study also addresses the missions of other federal and state agencies. National and regional agencies have missions outlining goals, objectives, strategies, and initiatives to encourage action for the benefit of the Nation's health, safety, and overall sense of wellbeing, all of which are outcomes to the WSC recreation project.

## TEXAS PARKS AND WILDLIFE

The following are TPWs major goals and objectives for the next ten years, revised and last adopted January 2005. Only those applicable to the WSC project are listed.

<b>Goal 1: Improve access to the outdoors</b>
Objectives
1.1 Identify opportunities to expand outdoor recreation, water access, hunting, and fishing on both public and private lands and waters.
1.5 Promote awareness and support of safe and responsible use of the outdoors.
<b>Goal 2: Preserve, Conserve, manage, operate and promote agency sites for recreational opportunities, biodiversity, and the cultural heritage of Texas.</b>
Objectives
2.3 Develop interpretive, educational and recreational programs at agency sites that demonstrate and promote understanding of the importance of natural and cultural resource conservation.
2.4 Protect, maintain, and restore appropriate terrestrial and aquatic habitat on agency sites.
2.5 Develop criteria for a statewide historic sites system in conjunction with the Texas Historic Commission.
2.7 Promote energy conservation and the use of alternative energy systems and programs.
<b>Goal 4: Increase participation in hunting, fishing, boating and outdoor recreation</b>
Objectives
4.1 Increase opportunities for youth to participate in outdoor recreation.
4.2 Promote and expand outdoor recreational activities.
4.3 Develop strategies to recruit, inform and retain new, lapsed and current outdoor users.
4.4 Increase access to and safety on public waters.
4.5 Promote outdoor recreation opportunities in urban areas.



Goal 5: Enhance the quality of hunting, fishing, boating and outdoor recreation.
Objectives
5.3 Develop private/public partnerships to maintain, enhance, and restore ecosystems and promote outdoor recreational opportunities.
5.5 Restore aquatic and terrestrial habitat where feasible to sustain and enhance healthy ecosystems.
Goal 7: Maintain or improve water quality and quantity to support the needs of fish, wildlife and recreation
Objectives
7.1 Promote watershed and range management practices that improve water quality and quantity.
7.2 Promote cross-agency and stakeholder cooperation that enhances water quality, quantity and habitat.
7.3 Incorporate instream flow and freshwater inflow needs into water permitting, planning, development and management processes.
7.4 Incorporate fish, wildlife, and recreation needs into the Regional Water Planning process.
7.5 Promote understanding of and support for the water needs of fish, wildlife and outdoor recreation.
7.6 Work with stakeholders to ensure that Water Quality Standards increasingly incorporate biological data to protect the health and productivity of Texas waters.
7.7 Encourage the conversion or transfer of existing unused water rights to the Texas Water Trust to protect instream uses

## **UNITED STATES DEPARTMENT OF TRANSPORTATION (USDOT)**

USDOT's goals seek to reduce traffic crashes involving pedestrians and bicyclists simultaneously increasing trips made by bicycling and walking (Bicycle and Pedestrian Program). For more information see the Other Social Effects appendix.

## **SAN ANTONIO MASTER PLAN 2011**

The San Antonio Master Plan 2011 contains vision statements, goals, objectives, and policies that encourage an active and safe city through sustainable urban design of its trails system (San Antonio Comprehensive Master Plan Framework). For more information see the Other Social Effects appendix.

## **SAN ANTONIO PARKS AND RECREATION SYSTEM STRATEGIC PLAN 2006-2016**

The Parks and Recreation System Strategic Plan 2006-2016 fully supports the goals and objectives related to Neighborhoods and Urban Design sections which supports recreation goals

for the study area (San Antonio Parks and Recreation Department). For more information see the Other Social Effects appendix.

## **BICYCLE MOBILITY ADVISORY COMMITTEE (BMAC)**

The City of San Antonio's mission statement regarding bicycles in the City is a key component of BMAC's San Antonio Bike Plan 2011 plan, and in summary states a significant goal of increasing bike ridership for daily travel and improving cycling safety by making the bike network accessible, direct, and continuous (Bicycle Mobility Advisory Committee). The Westside Creeks project would help satisfy this goal. For more information see the Other Social Effects appendix.

## **SA 2020**

Initiated by the Mayor's office in 2010, San Antonio (SA) 2020 creates a vision of what the citizens of San Antonio want to achieve by 2020 (SA2020). SA 2020 includes recommendations for many areas, including arts and culture, downtown development, economic competitiveness, education, family well-being, health and fitness, environmental sustainability, neighborhoods and growth management and transportation. The vision includes more walkable neighborhoods, a significant reduction in youth and adult obesity, and environmental friendly transportation.

## **MISSION VERDE SUSTAINABILITY PLAN**

The Mission Verde Sustainability Plan (MVSP) was adopted in 2009 by the City of San Antonio to address the challenge of meeting the city's needs today without compromising those of future generations of San Antonio (Mission Verde Sustainability Plan). The plan focuses on economic sustainability; its intent is to "invest in energy saving initiatives that would save the consumer and the community money, and serve as a catalyst for job creation and innovation." Among the initiatives of the Mission Verde plan is to create an integrated and efficient multi-modal transportation system.

## **THE WESTSIDE CREEKS RESTORATION PROJECT CONCEPTUAL PLAN 2011**

San Antonio River Authority embarked upon efforts with the City of San Antonio and Bexar County to engage the local community and other stakeholders to collect the local community ideas, concerns, and opportunities. It was important to determine the project's core values, which would resonate as themes throughout key messages for the identified core community values. The Westside Creeks Conceptual Plan showcases a series of workshops geared towards over 400 community participants and stakeholder's to establish priorities for the future of the Westside Creeks. The following table represents the communities' core values identified in the Westside Creeks Restoration Project Conceptual Plan consistent with the WSC Recreation study:

Westside Creeks Restoration Project Conceptual Plan 2011	
Historic Theme	
	Return the roots and the history of the creeks so future generations can make connections to their history.
Cradle to Grave Theme	
	This theme reflects the core value that the creeks should be accessible, safe, and usable for all members of society, regardless of age or other demographic factors.
Rebirth Theme	
	This theme was raised by several WCROC members. This process will essentially give new life to the creeks, effectively generating a new perception of the Westside Community. This project also presents an opportunity to reintroduce the Westside of San Antonio to the rest of the City as a place that is ecologically-sound, safe and inviting.
Bringing Nature Back Theme	
	This theme symbolizes a return to the natural beauty that once was, focused on the importance of bringing plants and animals back to the creeks. It also voices the need to create a biologically sound and environmentally sustainable vision.
Connections Theme	
	The core value here is the importance of the creeks as a way of connecting points of interests, transportation networks, and the Westside to the rest of San Antonio. The general feeling was that even though the creeks are on the Westside, they will be used by people from all parts of the city and county.

Other programs and committees have applicable interests in recreation component to the WSC project. As part of the public involvement and site analysis process for the Westside Creeks Restoration Project Conceptual Plan, various key stakeholders were interviewed about opportunities and challenges for this project. The stakeholders selected were in addition to the various groups identified to participate on the WCROC and should be mentioned here:

<b>Westside Creeks Restoration Oversight Committee (WCROC)</b>
Residents and Neighborhood Groups
Business Owners and Business Groups
Elected Officials
San Antonio
Bexar County
Technical Officials
Bexar County officials
City of San Antonio
San Antonio River Authority
Media
Westside Service Organizations
Schools and Universities
Our Lady of the Lake University
St. Mary's University
General Public

## **BENEFIT EVALUATION PROCEDURE**

### **STUDY AREA DEFINITION**

The proposed Westside Creeks recreation benefit analysis study area includes the dense residential development within the defined West Subarea in the San Antonio Park & Recreation System Strategic Plan for 2006-2016 (San Antonio Park & Recreation System Strategic Plan, 2006). This West Subarea is of similar characteristics and quality and represents the alternative recreation opportunities for the Westside Creeks study area. The System Strategic Plan is utilized to identify the recreation baseline for Westside Creeks recreation planning. The Plan identified recreation deficits and the acreages for general park needs. Based on the statistics in the report, the national average is 16 acres of park land per 1,000 residents. The following chart summarizes the park land needs of the West Subarea (based on June 2005 park acreage figures).

**Table 1. West Subarea Land Acquisition Needs Identification**

	2004 Inventory (acres)	Current Service Ration (Acres/Pop.)	2005 Estimated Population 211,824		2010 Estimated Population 210,396		2015 Estimated Population 210,970	
			Acres/ Goal	Excess/ Def.	Acres/ Goal	Excess/ Def.	Acres/ Goal	Excess/ Def.
Total City- Owned Park Acres	602.26	2.84/1,000	3,389	-2,787	3,366	-2,764	3,376	-2,774
Total Public Park Acres <sup>1</sup>	641.85	3.03/1,000	3,389	-2,747				

<sup>1</sup> Based on June 2005 Park Acreage, including City, County, State, Federal, and Incorporated Cities park land

In June 2005, the City owned 602.26 acres of park land, or 2.84 acres per 1,000 residents in the West Subarea. Based on the national average of 16 acres per 1,000 residents, a deficiency of 2,787 acres exists. Park acres of other public entities impact this total only minimally. Based solely on City population projections and park acreage figures (assuming no further acquisition), there will be a deficit of 2,764 acres by the year 2010. The System Strategic Plan's general priorities for recreation activities are considerations for the Westside Creeks project recreation study.

San Antonio, the largest city in Bexar County and the second most populous incorporated place in Texas, grew by 16.0 percent per the 2010 Census counts. In comparison to the other Top Ten cities in the U.S., San Antonio experienced the most population growth from 2000 to 2010. San Antonio is expected to grow by 41% between 2010 and 2040, an annualized growth rate of 1.2%. Bexar County is expected to grow by 31% over the same period, with an annualized growth rate of 0.9%. For comparison, Texas is expected to grow by 78%, an annualized growth rate of 1.9%. The population growth of San Antonio would only add to the calculated existing recreation deficits for the study area. Population projects per Census 2010 are presented in Table 2.

**Table 2. Study Area Population Through 2040**

Geographical Area	2010	2016	2040
Texas	25,145,561	27,505,386	44,872,038
Bexar County	1,714,773	1,900,877	2,253,060
San Antonio city	1,327,407	1,452,140	1,872,964
Westside Creeks Study Area	77,782	82,115	

Source: ESRI Community Analyst citing U.S Bureau of the Census, 2010 Census of Population and Housing(2010 and 2016 figures); Texas State Data Center (2040 projections for Texas and Bexar County); Texas Water Development Board (2040 projection for San Antonio)

## EXISTING RECREATION RESOURCES

Existing recreational facilities inventoried in the COSA Parks and Recreation System Strategic Plan provides opportunities for linkages into recreation programs and creek-based greenway parks with the proposed Westside Creeks project. Recreation facilities within the COSA include: 8 natural and wilderness areas, 81 hiking and biking trails, 41 miles of developed greenway trails,

3 Neighborhood Fishin' programs, and 243 city parks. Bexar County offers an additional 24 parks comprising community parks, open space, special use facilities, joint-sponsorship facilities, and civic centers. The COSA and Bexar County park websites are <http://www.sanantonio.gov/parksandrec/default.aspx> and <http://www.bexar.org/parks>.

Recreation facilities within the more immediate Westside Creeks ER and Rec project area include: 7 Downtown Runs and Walks and Bike Rides, several downtown bike racks, several traversing on-road bike facilities, and approximately 20 City of San Antonio and Bear County parks and greenways. All of these neighboring parks are open to the public free of charge; however, several community centers charge rental fees when applicable.

## **PROPOSED RECREATION**

The City of San Antonio and its residents desire recreation features as part of recommended restoration plan. Recreation features include a multi-use concrete trail, shade shelters, day use facilities, and directional and interpretive signage.

The recreational features are compatible with the recommended restoration project, and would serve the surrounding neighborhoods and region by providing non-consumptive recreational opportunities and eventual links to proposed trails and adjacent parks. The recreational features would not detract from the goals of the recommended restoration plan. The formulation of the recreational features is based on the guidance defined in Policy Guidance Letter No. 59, Recreation Development at Ecosystem Restoration Projects. The formulation of recreational features was conducted within the following framework:

- are totally ancillary, i.e. project was not formulated solely for recreation;
- would take advantage of the project's recreation potential;
- are not vendible; and
- would not exist without the project.

Recreation conceptual planning for the Westside Creeks project involved developing criteria that were sensitive to project hydrology/hydraulics and ecosystem restoration resources. The criteria were tested against the Westside Creeks project area, and the outcome of this exercise concluded with verifying that these criteria were applicable to the WSC project area with unique yet management site specific exceptions. These criteria used to develop the recreation conceptual plan are as follows:

- Create linear, undisrupted pathways for cohesive trail corridors
- Coordinate with local, city, and state recreation master plans to tie into existing trail
- Create connections to parks, community/recreation centers, schools, libraries, churches, bus stops, and community centers with places to work, shop, and play.
- Trail on one side of creek, not both
- No dead ends



Figure 3. Apache Creek Recreation Trails

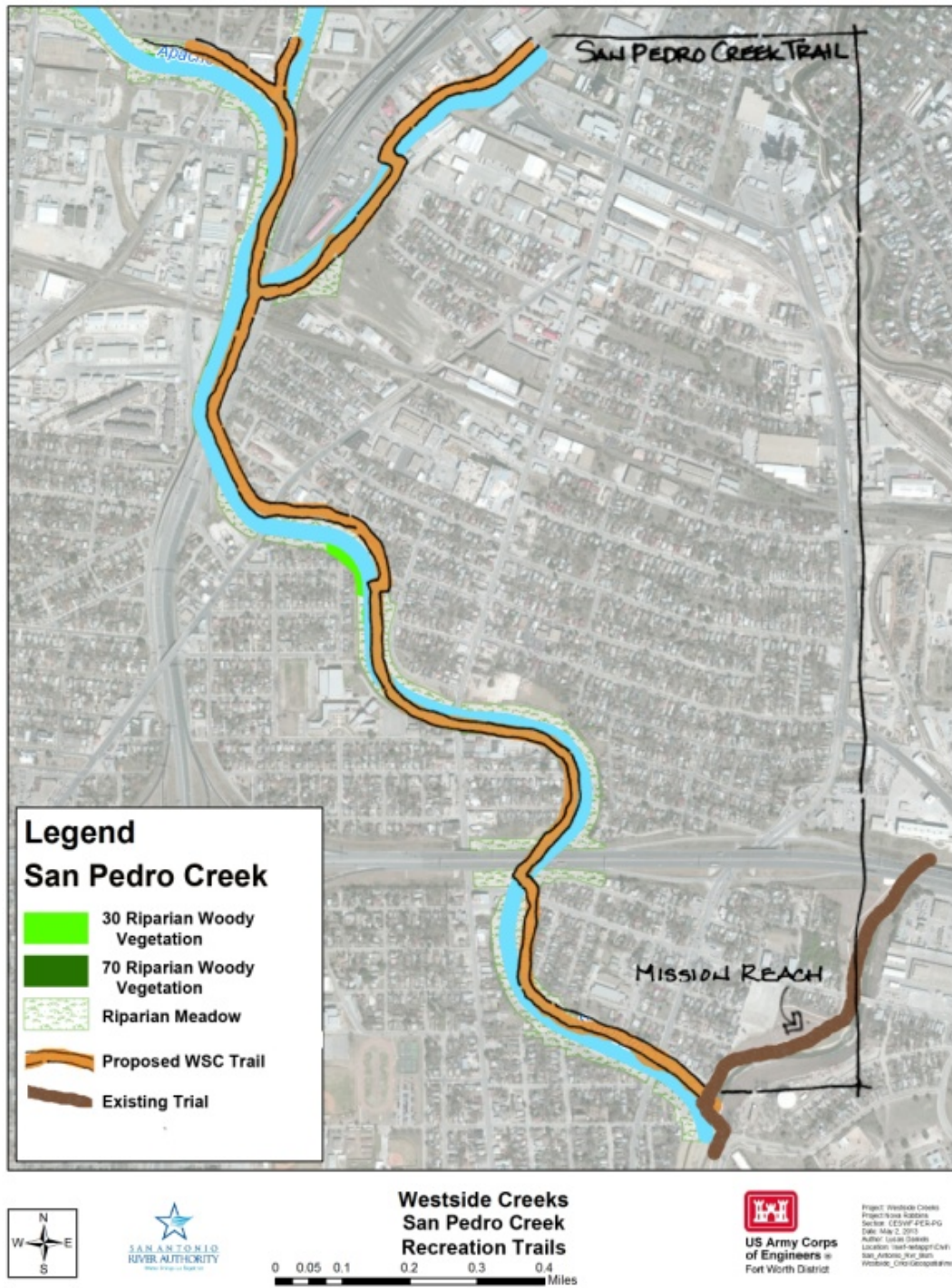


Figure 4. San Pedro Creek Recreation Trails



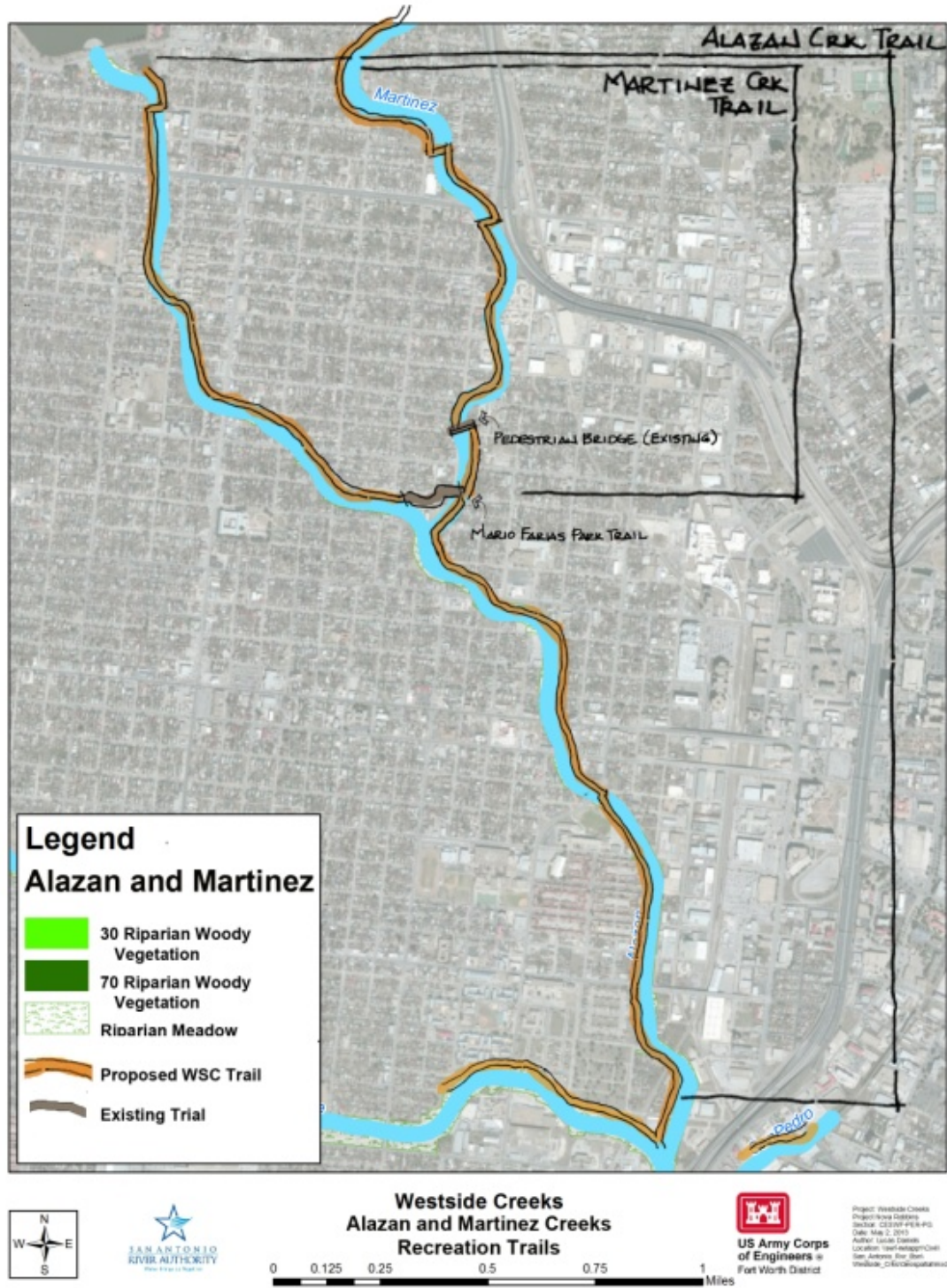
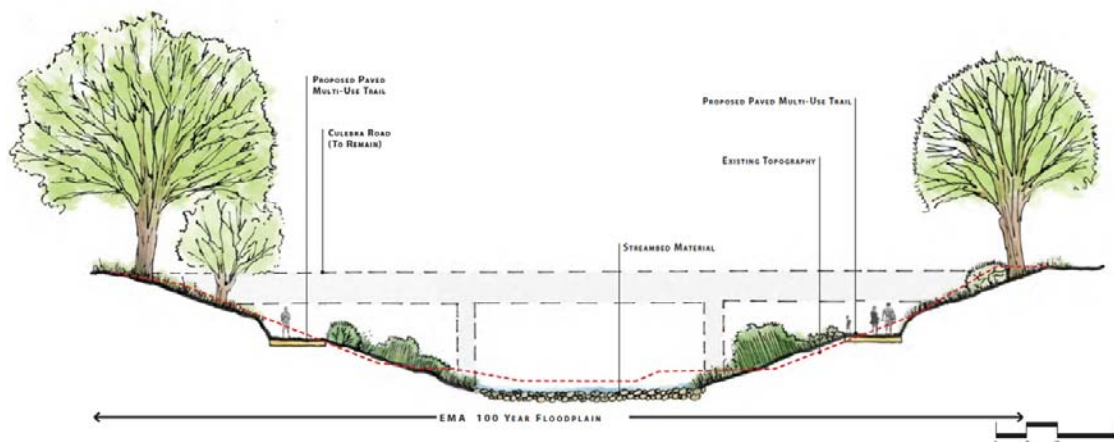


Figure 5. Alazan and Martinez Creek Recreation Trails

This section includes a description of recreation conceptual planning of multi-use trails, low-water crossings, and trailhead entrances.

### ***MULTI-USE TRAILS***

The main recreation component proposed for the Westside Creeks project is 44,600 linear feet of 10-foot wide multi-use trails incorporated into the current and planned City of San Antonio Mission Trail System. From an environmental perspective, recreation features are located to avoid adverse impacts to riparian vegetation. Not only will the trails enhance the visitation experience by taking advantage of the natural values the project ecosystem restoration features and by providing access to and along the project ecosystem restoration features, but it is anticipated to encourage social, cultural, scientific, and educational encouragement of the ecosystem restoration project. The development of these facilities will not involve extensive structural modification of the terrain but will require cut and fill adjustments to comply with American Disabilities Act (ADA) criteria. Accompanying facilities will include rest areas, picnic tables, water fountains, pedestrian bridges, interpretive signs, and gathering areas. OMR&R costs would cover trash pickup, mowing where applicable, and facility repair, rehabilitation, and replacement. The following graphic represents the criteria utilized in developing the conceptual trail plan.



**Figure 6. Typical Multi-Use Trail Cross Section**

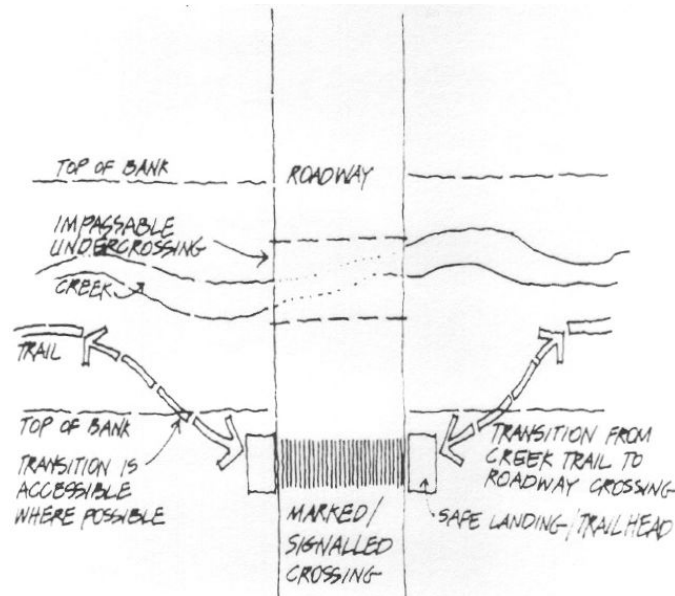
### ***TRAILHEAD ENTRANCES***

Trailhead entrances are a significant component proposed for the WSC ER and Rec project and will be adapted to promote a strong physical connection from the local communities as well as for visitors.

This section lists fourteen (14) trailheads and a register of neighborhood amenities within a half a mile unless otherwise noted. This is based on generally accepted walkability design practices dependent on assumptions about how far pedestrians are willing to walk. See Figure 8 for proposed trailhead locations.

Trailheads – These measures are evaluated by creek and neighborhood amenities within a half mile, a planning measure defined on acceptable walking distances. Trailheads meet the

recreation objective and take advantage of the opportunity to connect communities socially and culturally while providing educational opportunities.



**Figure 7. Example Trailhead Connection at Roadway Park  
(San Antonio Linear Park Development Program)**

San Pedro Creek Recreation Trailhead SP1 – This trailhead ties into the existing trails at Concepcion Park located at the terminus of Riverview Drive. This location would provide access to one of the San Antonio Missions National Historic Parks and the Pro Vida Academy Charter High school, and Knox Early Childhood Center.

San Pedro Creek Recreation Trailhead SP2 – A trailhead would be located on the south side of San Pedro Creek on South Flores Street. This trailhead would provide access to Brisco Academy, San Antonio Technology Academy, St. Philip of Jesus Catholic School, and Harris Middle School.

San Pedro Creek Recreation Trailhead SP3 – A trailhead at this location would provide a midway ½ mile access point between San Pedro Creek Recreation Trailhead SP2, San Pedro Creek Recreation Trailhead SP4, and Apache Creek Recreation Trailhead AP1. It would be located on the southeast side of San Pedro's confluence with Apache Creek. This is the location of the community-visioned Southgate Catalyst Site as established in the Westside Creeks Conceptual Plan.

San Pedro Creek Recreation Trailhead SP4 – This trailhead would provide the terminus for the recreation trails on San Pedro Creek. It would be located at Camp Street. An on-road bike facility is located approximately 0.3 miles to the southeast as well as the Downtown San Antonio Riverwalk and several other tourist attractions. From this trailhead location, seven designated Downtown Runs, Walks, and Bike Rides can be accessed within one mile. This is the location of the community-visioned Arts District Catalyst Site as established in the Westside Creeks Conceptual Plan.

Alazán Creek Recreation Trailhead AL1 – The trailhead would be west of Alazán Creek at Guadalupe Street. From here, users would have access to four schools within one mile: Navarro

Academy, JT Brackenridge Elementary School, Tafolla Middle School, and Sidney Lanier High School. The San Antonio Natatorium and the on-road bike facility at Guadalupe Street can also be accessed from this trailhead.

Alazán Creek Recreation Trailhead AL2 – This trailhead would tie into Smith Park at Buena Vista Street. An on-road bike facility begins here, and five other on-road bike facilities can be easily accessed from this location. Public facilities within a mile of this site include Escuela de las Americanas, the University of Texas-San Antonio Downtown, Brazan Branch Library, and the site of the historic Battle of Alazán. This is the location of the community-visioned Alazán Plaza Catalyst Site as established in the Westside Creeks Conceptual Plan.

Alazán Creek Recreation Trailhead AL3 – A trailhead located near Mario-Farias Park at Leal Street's existing pedestrian bridge would provide access to three schools within a half mile: Margil Elementary School, David Crocket School, and James Bowie Elementary School. This is the location of the community-visioned Farias/Crocket Catalyst Site as established in the Westside Creeks Conceptual Plan.

Alazán Creek Recreation Trailhead AL4 – From this trailhead on North Calveras, users would have access to on-road bike facilities, David Crocket School, Irving Middle School, and Ogden Elementary School.

Alazán Creek Recreation Trailhead AL5 – This location on West Poplar Street would provide access to Irving Middle School, Ogden Elementary School, and West End Park.

Alazán Creek Recreation Trailhead AL6 – This upstream terminus of the trails on Alazán Creeks would be located in Woodlawn Lake Park, providing access to Nelson Elementary School, Little Flower Catholic School, and a network of on-road bike facilities.

Apache Creek Recreation Trailhead AP1 – With an existing trail system in place along Apache Creek, the only trailhead recommended for Apache Creek would be located approximately midway between San Pedro Creek Trailhead SP3 and the east end of the existing San Pedro Trail. This trail would be located on Brazos Street north of the creek. [south trinity has on-road bike facility] The following public parks can be accessed within half a mile from this trailhead location: Patrolman, Guadalupe Martinez, Amistad Park, Excobar Field, and Cassiano Park. Additionally, Our Lady of the Peace Catholic School, Cooper Middle School, Barkley Ruiz Elementary School, and Estrada Achievement Center can be found within close proximity. The trailhead would also provide access to San Fernando Cemetery No. 1, a historic resource potentially eligible for listing in the NRHP. This is the location of the community-visioned Memorial Avenue Catalyst Site as established in the Westside Creeks Conceptual Plan.

Martinez Creek Recreation Trailhead MA1 – In association with Alazán Recreation Trailhead AL4 above, this trailhead approximately half a mile upstream at West Poplar Street would provide access to on-road bike facilities and access to Will Ojeda Park.

Martinez Creek Recreation Trailhead MA2 – This trailhead, located at Cincinnati Avenue, would provide access to Nelson Elementary School, Little Flower Catholic School, Beacon Hill Elementary School, KIPP Aspire Academy, and Higgs Carter King Gifted and Talented. This is the location of the community-visioned Cincinnati Gardens Catalyst Site as established in the Westside Creeks Conceptual Plan.

Martinez Creek Recreation Trailhead MA3 – Located at the Martinez Creek terminus south of I-10 at West Woodlawn, this trailhead would provide access to numerous on-road bike facilities as well as a future trail project proposed by the city to extend the Beacon Hill Neighborhood Linear

Park. This is the location of the community-visioned Fredericksburg Transit-Oriented Development/Old Spanish Catalyst Site as established in the Westside Creeks Conceptual Plan.

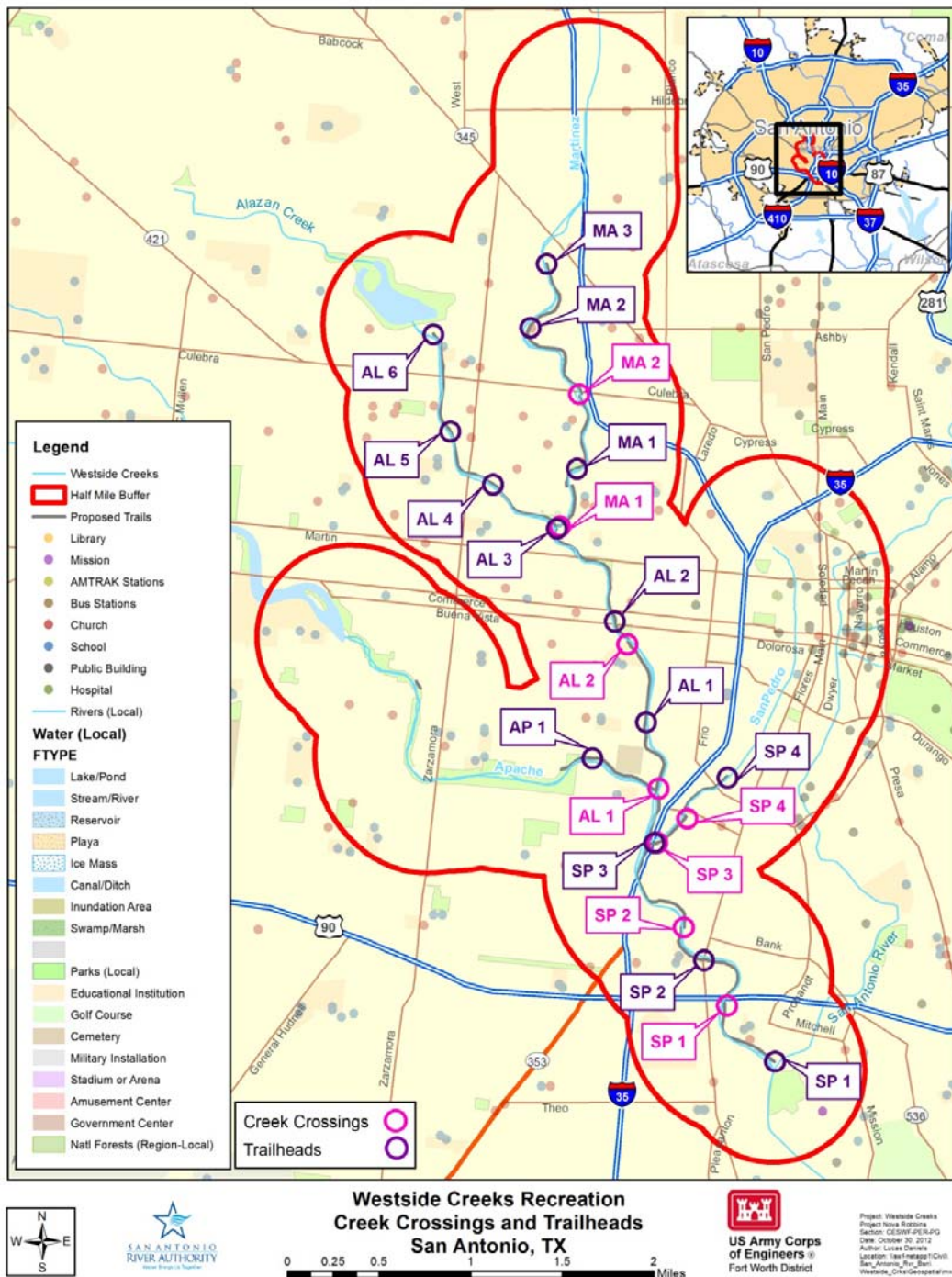


Figure 8 Trails - Locations of Proposed Creek Crossings and Trailheads

## **CREEK CROSSINGS**

Access to the creek and other neighborhood amenities would be made available by the establishment of strategically locating creek crossings along the creek's trails. These eight (8) proposed crossings are minimal in number. The below descriptions depict the significance of crossing the creeks at the documented location. Generally, when a creek must be crossed and a vehicular bridge is adjacent, the crossing would be located south of the bridge to minimize hydraulic impacts. See Figure 8 for corresponding spatial distributions of trails at proposed creek crossings.



**Figure 9. Example of Low Water Trail Crossing  
(Westside Creeks Restoration Project Conceptual Plan)**

San Pedro Creek Crossing 1 – This creek crossing would be located south of West Mitchell Street and I10 to provide access to both the Harris Middle School on the west side of San Pedro north of this crossing as well as Conception Park and other public amenities south of the crossing.

San Pedro Creek Crossing 2 – Located just north of Harris Middle School a creek crossing would allow access to this school south of the crossing on the west side of the creek as well as pockets of residential neighborhoods north of the crossing on the east side of the creek. Opposite the neighborhoods are industrial conditions less desirable for locating a trail.

San Pedro Creek Crossing 3 – This creek crossing would be located on the San Pedro Creek at the confluence with Apache Creek to provide access south of crossing to San Pedro Creek and north of crossing on Apache Creek's east side which has more space for trail placement versus the limited ROW on the west side of Apache Creek north of this crossing.

San Pedro Creek Crossing 4 – A creek crossing located at south of West Cevallos Street would be optimal at this location to move the trail to the northwestern side of San Pedro creek due to extreme ROW limitations on the southeast side of the creek.

Alazán Creek Crossing 1 – The creek crossing would tie the east side of Apache Creek to the south of the crossing with the northern side of Apache Creek's confluence with Alazán Creek to allow access to the greater number of residential neighborhoods as well as tie-in to the existing Apache Creek Trails. Tying into the northern side of the existing Apache Trails would maximize access to the greatest number of parks available in this area.

Alazán Creek Crossing 2 – This creek crossing would be located south of Buena Vista Street to allow access to the neighborhoods along the west side of Alazán Creek south of this crossing to public amenities north of the crossing such as Smith Park, John Tobin, and the proposed trailhead (Alazán Creek Recreation Trailhead 2) connecting Buena Vista Street's on-road bicycle facilities.

Martinez Creek Crossing 1 – The Alazán Creek Trail would cross Martinez Creek at the creeks' confluence. This crossing would allow access to Mario Farias Park and Willie Ojeda north of the confluence with the parks south of the crossing as well as provide the greatest opportunity to tie in the communities along Martinez Creek north of this crossing to the trails and associated parks. Note: the Martinez Creek Trail would utilize the pedestrian bridge located at Arbor Place to gain access to the west side of Martinez Creek north of the bridge and east of Martinez Creek south of the bridge.

Martinez Creek Crossing 2 – Due to ROW constraints to the north, a creek crossing would be located south of Culebra Road to transition the trail south of the crossing from the west side to the creek's east side north of the crossing. Note: An at-street crossing is unavoidable at this N. Sabinas Street location due to the confining limits of the creek's retaining walls.

Alazán Creek Crossings – No creek crossings located along Alazán Creek.

### ***Shade Structures***

Shade structures are proposed at trailheads and throughout the project at overlook locations, picnic/bench areas, and water fountain areas only where trees are deemed unfeasible. The quantity of shade structures are determined to be approximately six (6) throughout the Westside Creeks project.

### ***INTERPRETIVE BOARDS***

Interpretive signs are proposed throughout the project to take advantage of the educational value of the ecosystem restoration but not distract from them. The interpretive markers and display boards should interfere with neither the restored habitat nor the developed vistas. Way-finding signs are proposed at approximately fifty (50) trailheads and various locations along the trails to instruct users on navigating the trails, locations of recreation and community amenities relative to their position, and care and conduct while using the trails to preserve access, health, safety, and the restoration measures.

Minimum signage information shall include, as adopted from the City of San Antonio's Planning and Design Guidelines for Creek-Based Greenways:

**Trailheads**

- Trail Name
- Trailheads Upstream & Downstream
- Mileage (from Trailhead to Trailhead)
- Trail Map
- Accessibility Rating
- Flood Hazards

**Trail-side Signs**

- Trail Name
- Milepost
- Facilities Ahead

**Safety Signage**

- Food Hazards and Warnings
- Nearest Exit

***OTHER RECREATION AMENITIES***

Benches, water fountains, picnic tables, and trash receptacles are proposed along the trails throughout the WSC project. Benches, picnic tables, and associated trash receptacles will be complemented with shade from the proposed woody riparian vegetation or shade structures and situated toward advantageous vistas. Water fountains will be located largely equidistant from one another throughout the project. These day use facilities at various locations would provide approximately twenty-three (23) picnic tables, fifteen (15) water fountains, fifteen (15) benches, and twenty three (23) trash receptacles.

**RECREATION BENEFITS**

**NATIONAL PERSPECTIVE**

The national economic development (NED) benefit evaluation procedures contained in ER 1105-2-100 (22 Apr 2000), Appendix E, Section VII, include three methods of evaluating the beneficial and adverse NED effects of project recreation: travel costs method (TCM), contingent valuation method (CVM), and unit day value (UDV) method.

The UDV method was selected for estimating recreation benefits for the WSC recreation study. When the UDV method is used for economic evaluations, planners will select a specific value from the range of values provided annually. Application of the selected value to estimate annual use over the project life, in the context of the future with- and future without project framework of analysis, provides the estimate of recreation benefits.

**FUTURE WITH- AND WITHOUT PROJECT CONDITIONS (FWPC AND FWOPC)**

***FWOPC***

Since 2000, San Antonio voters have supported three 1/8 of a cent sales tax propositions to fund the Linear Creekway Parks Development Program which was designed to acquire open space and create linear parks along Salado Creek, Leon Creek, Medina River, and the San Antonio River. The sales tax funding was approved in 2000 (Proposition 3) for \$20 million, in 2005 (Proposition



2) for \$45 million, and in 2010 (Proposition 1) for \$45 million. The Linear Creekway Parks Development Program has paid for land acquisition, design, and construction of linear creekway hike and bike trails throughout the city of San Antonio. In 2000, the program focused on the Salado and Leon Creeks. In 2005, the program expanded to include the Medina and San Antonio Rivers, and in 2010 the program expanded again to include the Westside Creeks. All five creeks are U.S. Army Corps of Engineers-engaged projects. Of the \$45 million passed in 2010, \$10,116,980 has been allocated for the Westside Creeks to develop a (San Antonio River Authority) demonstrating the City's goal to link the Salado and Leon Creeks to the San Antonio and Medina Rivers, as well as the Westside Creeks to the San Antonio River.

Currently the Westside Creeks project area is devoid of recreation trails with the exception of Apache Creek Trails and parks beyond the project ROW. If the Linear Creekway Parks Development Program and the Westside Creeks Ecosystem Restoration projects do not expand trails into the Westside Creeks area, the recreation conditions are expected to not change from the current activity level of no recreation for the project area. This FWOPC would provide neither access to the creeks nor a connection to other adjacent trails and parks.

### ***FWPC***

Proposed general recreation includes access to walking, running, bike riding, bird watching, gathering, bank fishing, and environmental interpretation. Recreational use is measured by annual visits where a visit consists of one person on a day trip. Annual visits to the WSC study area with a WSC project, or future with project conditions (FWPC), does not assume transfer of ownership or reauthorization from substitute recreation resources (for more information, see Value of Recreation Use Diminished with Project section below). Annual visits to the WSC study area without the WSC project, or FWOPC, assumes complete removal of the project via deauthorization for general recreation.

### ***EXPECTED ANNUAL VISITS***

Economic justification is based on an evaluation of competing facilities, existing and expected future use with and without the recommended plan, and unfulfilled demand. According to the Texas Parks and Wildlife Department (TPWD), Land and Water Resources Conservation and Recreation Plan, which identifies population, usage, and demand trends within the study area, the demand for recreation facilities, such as trails and opportunities for bird watching, is steadily increasing. The San Antonio Parks and Recreation System Strategic Plan 2006 and TPWD also state that San Antonio ranks below average for all outdoor activities. Additionally, the Westside Creeks trails would offer safe routes to community schools, provide access to recreation, and safe routes to work. Considering the increased demand, the deficit in outdoor activities and the disposition of a larger trail network to increase participation to a regional scale, a maximum participation rate is applied to the potential users. These users are the communities of the Westside Creeks (estimated population projection of 82,115 by 2016) and a portion of the City of San Antonio's population (estimated population projection of 1,452,140 by 2016). Applying the maximum participation rates to the population of potential users, the recreation resources would be used to capacity from the time it becomes available to the public through the period of analysis.

Current standards from the Texas Outdoor Recreation Plan dated 1994 indicate the type of trail proposed will accommodate 57,662 visitors per year per mile of trail for the pedestrian trail. For a 44,600-foot multi-use pedestrian trail, the total capacity usage would be approximately 481,000 visitor days per year calculated as follows: (44,600 linear feet / 5,280 linear feet per mile) times

(57,000 visitors per year per mile) equals approximately 481,000 visitors per year, as represented in Table 3.

**Table 3 Annual Visits to the WSC Study Area**

Recreation Category	Annual Visits
FWOPC General Recreation	0
FWPC General Recreation	481,000

## VALUE OF RECREATION USE DIMINISHED WITH PROJECT

There are several substitute sites within an hour drive and within a half-hour drive of the Westside Creeks study (Appendix A List of Substitute Recreation Sites) area that offer the same types of general recreation opportunities which would typically be causation for transferred or diminished recreation visits. The effect of the WSC recreation project affords trail users from existing substitute sites the ability to access the Westside Creeks project and other nearby existing parks. As a result, regional substitute sites would experience an increase in visitation. Without the linear connectivity of the WSC project to these other trails in linear greenway parks such as Mission Reach and the downtown San Antonio walk and bike routes, substitute sites will not experience their own heightened value as a result of access provided by a future with the Westside Creeks project. In other words, substitute and nearby sites would experience greater participation owing to the implementation of the Westside Creeks project.

As a result, no general recreation visits would be transferred or diminished since a future with the Westside Creeks project would incentivize users to continue trekking connected trails for the purpose of exercise, exploration, alternative routes for transportation, and leisure activities because this is the nature of providing access to a larger network of trails.

## POTENTIAL RECREATION USE IN THE STUDY AREA

The future without project condition analysis for the Westside Creeks study area does not include existing recreation value as lands within the project are devoid of recreation opportunities and lack connectivity to neighboring parks and other recreation facilities. The future with-project condition would foster recreation value of the area based on the UDV method. Table 4 illustrates the method of assigning a point rating to a particular general recreation activity. “General” refers to a recreation day involving primarily those activities that are attractive to the majority of outdoor users and that generally require the development and maintenance of convenient access and adequate facilities. The table shows the point values assigned to general recreation including five criteria: (1) the quality of the recreation experience as affected by congestion; (2) availability of substitute areas in terms of travel time; (3) carrying capacity determined by level of facility development; (4) accessibility as affected by road and parking conditions; and (5) environmental quality based on aesthetics. The WSC study area is rated on a 100-point scale. The total possible points that can be assigned to each criterion are as follows: (1) Recreation Experience – 30; (2) Availability of Opportunity – 18; (3) Carrying Capacity – 14; (4) Accessibility – 18; and (5) Environmental – 20.

**Table 4. Recreation Point Value Assignment**

<b>Criteria</b>	<b>Judgment factors</b>				
I. Recreation experience  <b>Point Value: 10 of 30</b>	Two general activities  0-4	Several general activities  5-10	Several general activities: one high quality value activity  11-16	Several general activities; more than one high quality high activity  17-23	Numerous high quality value activities; some general activities  24-30
II. Availability of opportunity  <b>Point Value: 6 of 18</b>	Several within one hour travel time; a few within 30 minutes travel time  0-3	Several within one hour travel time; none within 30 minutes travel time  4-6	One or two within one hour travel time; none within 45 minutes travel time  7-10	None within one hour travel time  11-14	None within two hour travel time  15-18
III. Carrying capacity  <b>Point Value: 9 of 14</b>	Minimum facility for development for public health and safety  0-2	Basic facility to conduct activity(ies)  3-5	Adequate facilities to conduct without deterioration of the resource or activity experience  6-8	Optimum facilities to conduct activity at site potential  9-11	Ultimate facilities to achieve intent of selected alternative  12-14
IV. Accessibility  <b>Point Value: 18 of 18</b>	Limited access by any means to site or within site  0-3	Fair access, poor quality roads to site; limited access within site  4-6	Fair access, fair road to site; fair access, good roads within site  7-10	Good access, good roads to site, fair access, good roads within site  11-14	Good access, high standard road to site; good access within site  15-18
V. Environmental  <b>Point Value: 9 of 20</b>	Low esthetic factors that significantly lower quality  0-2	Average esthetic quality; factors exist that lower quality to minor degree  3-6	Above average esthetic quality; any limiting factors can be reasonably rectified  7-10	High esthetic quality; no factors exist that lower quality  11-15	Outstanding esthetic quality; no factors exist that lower quality  16-20

Point value assignments for Table 4 are based on Economic Guidance Memorandum (EGM) 09-03. The Criteria and Judgment Factors for General Recreation were used as the basis of the estimated point values for the proposed recreation area. Judgment factors were reviewed after conducting site visits, coordination with local agencies, and evaluating the Westside Creeks Conceptual Plan and City of San Antonio Park Usage report. The Westside Creeks Conceptual Plan showcases a series of workshops geared towards over 400 community participants and

stakeholder's to establish priorities for the future of the Westside Creeks. The following selection factors were used for the criteria outlined in Table 4.

- I. Recreation Experience: The Westside Creeks recreation project would provide a linear park, a pedestrian-friendly transportation corridor, and a source of recreational opportunity throughout the community. The recreation facilities would give residents and visitors access to the restored creeks, providing additional mobility for the community through safe walk and bike paths that will connect the Westside to the San Antonio River and to the larger trail networks. The trail would be a continuous trail capable of supporting pedestrians and bicyclists in improving their options for recreation, fitness, environmental education, alternative transportation, and restore a sense of permanence, history, culture, and community for a growing urban populous. Even though these activities are considered significant by the community, the point value rating is estimated as a midpoint on the judgment factor scale because these activities are regarded as general activities common to the region, not uncommon high-value, water-oriented activities. Point Value: 10 out of 30.
- II. Availability of Opportunity: The availability of opportunity rating is based upon current local recreation facilities near the project area within the proposed recreation resource location. At the high end of the scale are those recreational facilities which are a geographical rarity; these are sites for which there is no close substitute within a 2 hour travel time. The primary purpose of the recreation resource at Westside Creeks project location chiefly embraces community participation with the expectation of a number of visitors from the region. Although the proposed recreation facilities would provide a high value of availability to the local community due to accessibility to other similar projects, alternative facilities exist regionally for the proposed recreation facilities. Scores for this judgment factor are therefore expected to be mid to low scale. Point Value: 6 out of 18.
- III. Carrying Capacity: The proposed Westside Creeks project recreation resources carrying capacity point values are estimated to improve with the recreation component implementation. The general recreation values are based on the ultimate use of the site potential, without overuse of the proposed recreation resources, and needless to say, without misuse of the proposed ecosystem restoration resources. Access to the creeks for multi-use trail activities and environmental observation comprise a large part of the projected recreation resources use, and the trails are considered to be optimum facilities to conduct recreation activity at the site's potential without interference with the ecosystem restoration project. Peak use is conservatively projected to occur during more than half of the calendar year since the project area is, at worst, subject to warm to cool winters with cool to cold nights. Point Value: 9 out of 14.
- IV. Accessibility: The accessibility rating is based upon the availability of proposed trailheads, intersecting street gateways, and existing and planned greenway trail connections in good condition that would provide access to the proposed recreation facilities. Trailheads are proposed throughout the Westside Creeks project area at existing parks, schools, churches, and optimal intersecting street gateways. The WSC trails system is proposed to tie into other similar projects, such as the recently completed trail along Elmendorf Lake and the ongoing Linear Creekways Initiative. Point Value: 18 out of 18.
- V. Environmental: The environmental quality rating is based upon the aesthetic values of the proposed WSC project recreation resource facilities, project lands, and the ease of correcting any limiting aesthetic factors. The proposed ecosystem restoration project site

would provide aesthetic values that would enrich an urban stream providing above average aesthetic quality; any limiting factors can be reasonably rectified. Point Value: 9 out of 20.

Current standards indicate this type of trail will accommodate 57,662 visitors per year per mile of trail for the pedestrian trail. For a 44,600-foot multi-use pedestrian trail, the total capacity usage would be approximately 481,000 visitor days per year calculated as follows: (44,600 linear feet / 5,280 linear feet per mile) times (57,000 visitors per year per mile) equals approximately 481,000 visitors per year. The point values assigned on the applicable criteria and assigned points are as follows:

- Recreation Experience: 10 points
  - Availability of Opportunity: 6 points
  - Carrying Capacity: 9 points
  - Accessibility: 18 points
  - Environment 9 points
- 52 Points

**Table 5 Conversion of Points to Dollar Values**

Point Values	General Recreation Values (1)
0	\$ 3.72
10	\$ 4.42
20	\$ 4.89
30	\$ 5.58
40	\$ 6.98
50	\$ 7.91
60	\$ 8.61
70	\$ 9.08
80	\$ 10.01
90	\$ 10.70
100	\$ 11.17

## VALUE OF USE WITH THE PROJECT

The value of a day of general recreation at the proposed Westside Creeks study was determined for each activity using the guidelines for the Assigning Points for the General Recreation in Table 5. The points were then converted to dollar values based on the EGM 12-03, Unit Day Values for Recreation for Fiscal Year 2012, which is based on ER 1105-2-100. Table 5 displays the point value conversion to a unit day value in fiscal year 2012 (FY12) dollar amounts. The 52 points generated a user day value of \$8.05, thus the annual benefit for the trails and day use facilities is estimated to be \$3,872,050 since 481,000 visitors per year times \$8.05 is approximately \$3,872,050.

## NET PROJECT BENEFITS

Table 6 displays unit costs for recreation features, total and annual costs, total benefits, and benefit-cost ratio used for conducting a benefit-cost analysis. Benefit-cost analysis is a systematic process for calculating and comparing benefits and costs of a project or decision. Costs were annualized using an interest rate of 3.75 percent, over a 50-year period of analysis. The addition of recreation does not increase the Federal cost share by more than 10 percent (ER 1105-2-100, para. 3-7.b.(5)). The annual cost for the recreation component is \$281,723. With annual benefits estimated at \$3,872,050, net benefits for recreation are \$3,590,327. The resultant benefit cost ratio is 13.74 making the recreational features economically justified.

A simplified sensitivity analysis of reduced number of visits was also conducted to determine the minimum benefit cost ratio threshold that the investigation project must meet to be determined if the recreation component of the project provides more benefit than it costs to construct. This threshold is estimated at 240,500 annual visits, half of expected future use with the recommended plan, which would still yield a benefit cost ratio of an acceptable ratio: 7.74. The level of uncertainty that annual visitation will be less than this threshold is very low due to the park and trail deficiency in the region, urban location, and community characteristics. This serves to justify that recreation benefits outweigh its costs.

**Table 6 Summary of Recreation Costs**

<b>Recreation Item</b>	<b>Unit</b>	<b>Quantity</b>	<b>Total Cost</b>
10-ft trail	LF	44,600	\$2,772,529
Shade Structure	EA	6	833,470
Interpretive/Directional Signage	EA	50	3,832
Benches	EA	15	127,636
Water fountains (dog and people)	EA	15	62,105
Picnic tables w/ pads	EA	23	48,393
Trash Receptacles	EA	23	14,623
<b>Subtotal Recreation Features</b>			<b>3,862,588</b>
Plans and Specifications			726,773
Supervision and Administration			715,167
<b>Total Recreation</b>			<b>\$5,304,528</b>

**Table 7. Annual Costs, Benefits and Net Benefits for Recreation**

Total Recreation Cost First Cost	5,304,528
Annual Interest Rate	0.0375
Period of Analysis (years)	50
Construction Period (months)	18
Compound Interest Factor	18.49
Capital Recovery Factor	0.0445742
Interest During Construction	\$1,743,919
Investment Cost	\$5,445,361
Interest	\$204,201
Principle	\$38,522
Annual Operation/Maintenance	\$39,000
<b>Total Annual Charges</b>	<b>\$281,723</b>
<b>Annual Recreation Benefits</b>	<b>\$3,872,050</b>
<b>Net Annual Recreation Benefits</b>	<b>\$3,3,590,327</b>
<b>Recreation Benefit-to-Cost Ratio</b>	<b>13.74</b>

## IMPACT OF RECREATION FEATURES ON RESTORATION PROJECT

The recommended recreation plan will not adversely impact the recommended restoration plan. It is only when the ecosystem has value to humans that it will be cared for and sustainability is really achievable. The specific goal of the restoration was to restore to the extent practicable, a sustainable, dynamic, riverine ecosystem providing habitat for aquatic and riparian dependent migratory and native resident bird species in the Westside Creeks study area; the broad goal of the recreation was to maximize quality to the habitat by providing opportunities for the human population to value the restored ecosystem. For the restoration goal to be truly successful, the recreation goal must also succeed. To facilitate achieving both, recreation was developed after the restoration measures were established and the recommended (NER) plan was identified. The recreation NED was determined as an exercise to demonstrate its benefit over its costs. Trails were designed to avoid passing directly through the best habitat types. Not allowing trails to bisect certain vegetation types allows use of the trail while not impacting the more sensitive species that may choose to hide, nest, or forage within the denser vegetation types. Additionally, trails were not allowed to replace vegetation areas directly adjacent to any aquatic areas. Trails, rest stations, pavilions, and other components of the recreation plan will be located to allow human observation, study, exercise, interaction, and appreciation but to not interfere with the functioning ecosystem. Also, the development of trails in the Westside Creeks area strengthens the value of the City of San Antonio's trail network effort as it connects more parks, community amenities, and regional destinations than trail segments alone.

## APPENDIX J-A

List of Substitute Recreation Sites Within a Half Hour Drive of the WSC Study Area

### CITY OF SAN ANTONIO FACILITIES

#### *Neighborhood Parks*

- Acme
- Alderete
- Amistad
- Benavides, Father
- Collins Gardens
- Farias
- Garcia
- Ingram Hills
- Lee's Creek
- Los Angeles Heights
- Martinez
- Monticello
- Navarro
- Ojeda
- Seeling
- Van de Walle
- Vidaurri

#### *Community Parks*

- Cassiano
- Cuellar
- Elmendorf
- Garza
- Lackland Terrace
- Las Palmas
- Levi Strauss
- Meadowcliff
- Monterrey
- San Juan-Brady
- Slick Creek
- Sunset Hills
- Tobin
- Ward, Joe
- West End
- Westwood Village



*Large Urban Parks*

- Rosedale
- Woodlawn

*Sports Complexes*

- Calderon
- Escobar Field
- Northside Tennis Center
- San Antonio Natatorium

*Greenways*

- Apache Creek
- Leon Creek Greenway South

*Special Use Facility*

- Levi Strauss Park Hdqtrs.

*Urban Spaces*

- Catalina
- Smith

**BEAR COUNTY FACILITIES**

- Rodriguez Park

**CITY OF BALCONES HEIGHTS FACILITIES**

- Rogiers
- Novack Park

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